A Big Earth Data Platform for Three Poles

**Organic contamination and ancient DNA extraction of six hanging coffin human remains**

1、Description

DNA was extracted from teeth or phalanx. Firstly, we conducted 2 hours UVirradiation on the samples, and removed a layer of surface using a sterile dentistry trill, then again irradiated with 1 hour UV-light on the samples. We drilled out ~80 mg of bone powder for every sample with the sterile dentistry trill, and only do 2 samples at one time (include following procedures until performing sequencing; samples from different archaeological sites were never handled together) to avoid potential individual cross-contamination. Using the 80 mg bone powder, we performed DNA extraction following the silica suspension protocol from an early report (Rohland and Hofreiter 2007), which was modified afterwards (Allentoft, et al. 2015) for customizing recovering of more shorter DNA fragments, that finally resulting a total of 100 μl aliquots for each sample. In brief, the bone powder was digested over night with proteinase K in 0.5M EDTA plus 10% N-Laurylsarcosyl suspension, then the released DNA was absorbed in solution which includes PB buffer, 5M sodium acetate, 5M sodium chloride and SiO2 suspension, and followed by three times of purification using 80% ethyl alcohol. Finally, after airing, the DNA was eluted with 100 μl EB buffer. Next, to perform preliminary aDNA preservation situation screening, using 20μl DNA aliquots of each sample, we built the double strand library (DSL) with no Uracil- DNA-Glycosylase (UDG) treatment under a single indexing with commercial kit (cat no: E7370) from New England Biolabs (Ipswich, MA) following the manufacturer’s guidelines, as previously reported (Meyer and Kircher 2010) that includes end prep, adaptor ligation, purification, PCR amplification and size selection steps. PCRs were conducted in a final volume of 50 μl using AmpliTaq Gold 360 DNA Polymerase (AmpliTaq Gold, Life Technologies Applied Biosystems) which is able to well amplify across uracils, preserve the DNA damage pattern that induced by deamination, which indicating of authentic aDNA (Krause, et al. 2010). We performed all the sequencing (also the following captured library sequencing) on the Illumina HiSeq X Ten (PE-150) platform ( https://www.illumina.com.cn/systems/sequencing-platforms/hiseq-x.html ). The calculated appraise indexes of aDNA quality and preservation are shown in Table S1. Lastly, we rebuilt the DSLs with 3 hours UDG treatment using the remaining DNA extraction aliquots, which could largely remove uracil residues from DNA fragmental end to leave abasic sites, and cuts the DNA at the 5´ and 3´ sides of the abasic sites with enzyme endonuclease VIII (Endo VIII). For these libraries, we performed the mtDNA capture using myBaits® Mito-Target Capture Kits as previous report (Enk, et al. 2014). Briefly, we used the biotinylated RNA “baits” that are transcribed from the human genomic DNA to perform the capture in solution overnight at 65°C, then mixed in streptavidin-coated magnetic beads and sequestered the targets with a magnetic stand. The PCRs for both pre-capture and post-capture are performed using KAPA HiFi Hot start Polymerase (KAPA BIOSYSTEMS).

2、Keywords

Theme：Hanging-coffin,Genetic diversity,Population,Sites
Discipline：Human-nature Relationship
Places：China
Time：3000 years before

3、Data details

1.Scale：None

2.Projection：

3.Filesize：0.01MB

4.Data format：None

4、Space scope

|  |  |  |
| --- | --- | --- |
| - | north：0.0 | - |
| west：0.0 | - | east：0.0 |
| - | south：0.0 | - |

5、Time frame:None--None

6、Reference method

References to data:

QI Xuebin. Organic contamination and ancient DNA extraction of six hanging coffin human remains. A Big Earth Data Platform for Three Poles, doi:10.11888/Ecolo.tpdc.2711982021

References to articles:

Zhang, X., Li, C., Zhou, Y., Huang, J., Yu, T., Liu, X., Shi, H., Liu, H., Chia, S., Huang, S., Guo, Y., Shoocongdej, R., Ji, X. & Su, B. (2020). A Matrilineal Genetic Perspective of Hanging Coffin Custom in Southern China and Northern Thailand. iScience 23, 101032.

7、Supporting project information

Pan-Third Pole Environment Study for a Green Silk Road-A CAS Strategic Priority A Program

8、Data resource provider

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